opHA 3 Getting Started

Introduction

The purpose of the guide is install and set up from scratch opHA 3.0, the Opmantek High Availability solution.

Installation

This guide provides instructions on how to manually install opHA on a server.

Installation Prerequisites

- The individual performing this installation has a small bit of Linux experience
- Root access is available
- Internet access is required for installing any missing but required software packages
- NMIS must be installed on the same server that opHA is being installed on. Here you can read the NMIS installation guide.
- You will need a license for opHA (CONTACT US for an evaluation license)
- **opHA has to be installed onto the Primary and each Poller NMIS server**
- **If using opCharts on Primary each poller will also need opCharts.**

Getting Started

Download the latest product version from opmantek.com

> Prior to attempting to install opHA and undertaking configuration it is CRITICAL that clock synchronisation via ntpd or chronyd is fully operational and all systems validate as being synchronise off a similar clock source linked to the global clocking infrastructure.
>
> chronyd is purported to be better suited to virtual environments and contains additional reporting features to assist with troubleshooting when used in a private clock distribution setup. ChronyD is the default for RedHat.
>
> The requirement for good timekeeping is a basic logging element however, SSL crypto is time dependent and variation in time beyond a couple of minutes can cause various rejections, timeout responses and failures.
>
> Having the time of day clock synchronised is an underlying design feature of streaming cryptography such as SSL as a component of the protection mechanism.

Installation Steps

Download or transfer the .run using wget, scp or sftp or any transfer tool. Repeat this process for each server involved.

- Start the interactive installer and follow the instructions (**Note**: Should be run as sudo):

```
/tmp# chmod 755 opHA-Linux-x86_64-3.0.6.run
/tmp# ./opHA-Linux-x86_64-3.0.6.run
Verifying archive integrity... All good.
Uncompressing opHA 3.0.6  100%

++++++++++++++++++++++++++++++++++++++++++++++++++++++
opHA (3.0.6) Installation script
++++++++++++++++++++++++++++++++++++++++++++++++++++++

This installer will install opHA into /usr/local/omk.
To select a different installation location please rerun the
installer with the -t option.
```

- The script can also run with in a smarter non-interactive installation with preseeding.
- The installer will interactively guide you through the steps of installing opHA. Please make sure to read the on-screen prompts carefully.
- When the installer finishes, opHA is installed into `/usr/local/omk`, and the default configuration files are in `/usr/local/omk/conf`, ready for your initial config adjustments.
- A detailed log of the installation process is saved as `/usr/local/omk/install.log`, and subsequent upgrades or installations of other Opmantek products will add to that logfile.

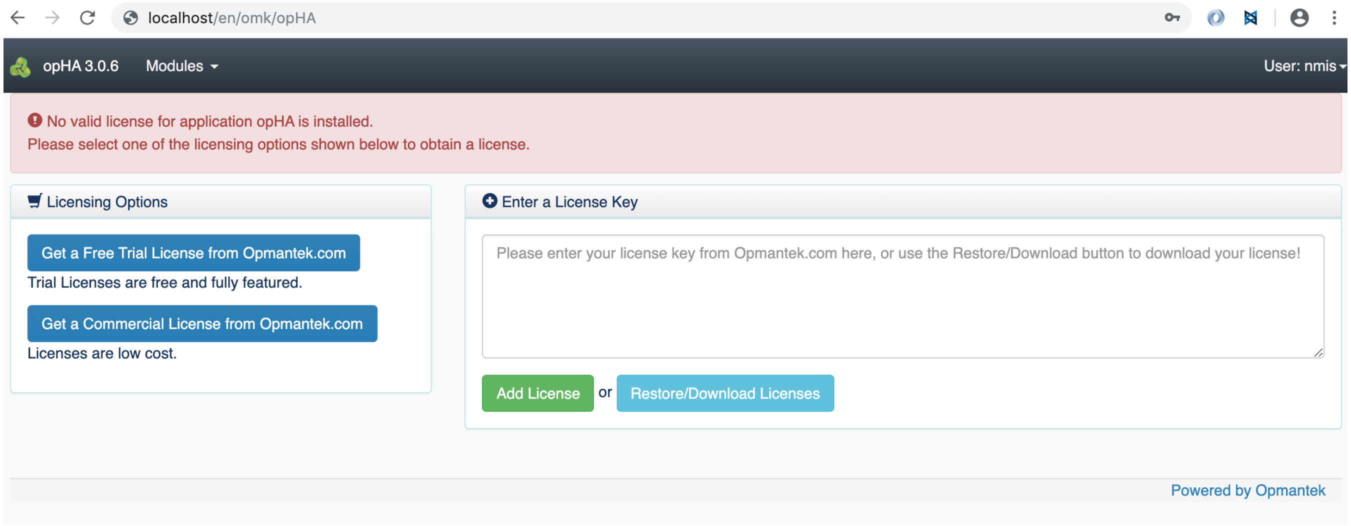
Enter License and accept EULA

If the installation was successful we will be able to see this message:

```
If your browser is running on the same machine as opHA was
installed onto, this would be

http://localhost/omk/opHA/
```

*This URL should present you with a webpage that allows you to enter a license key and accept a EULA. This step will need to be completed on **each** opHA instance!*



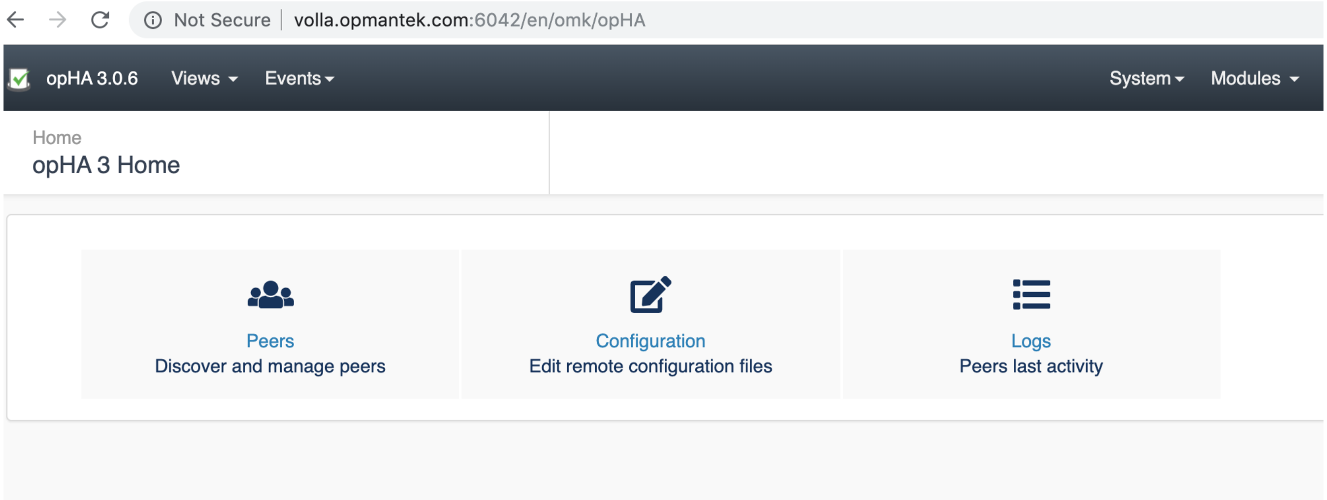
No valid license for application opHA is installed.
Please select one of the licensing options shown below to obtain a license.

Trial Licenses are free and fully featured.

Licenses are low cost.

Please enter your license key from Opmantek.com here, or use the Restore/Download button to download your license!

After successful license key and EULA acceptance you will be presented with a dashboard that looks like this:



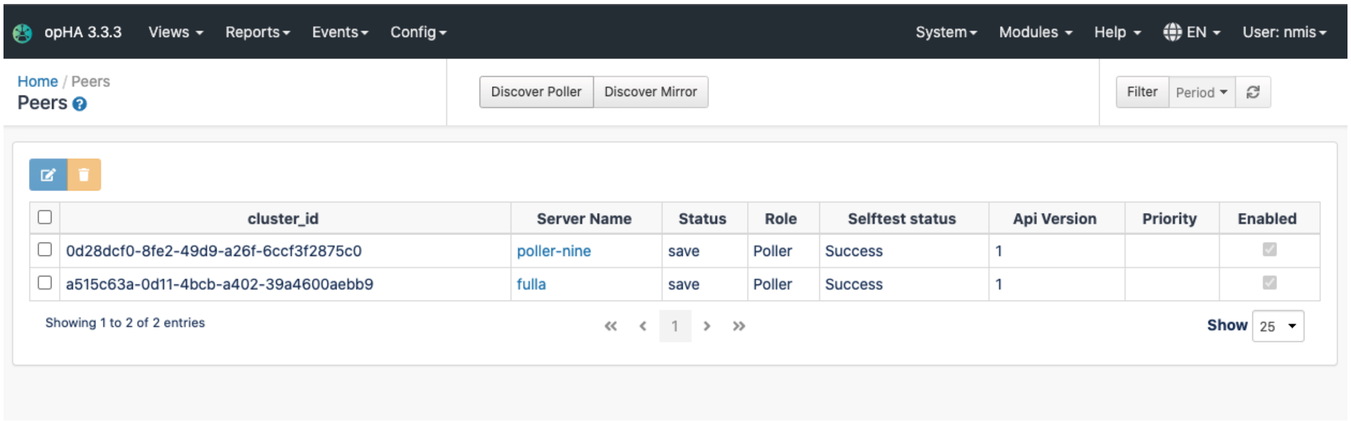
opHA needs to be installed in all the servers - Primaries and pollers - but we will be using the GUI only from the **Primary** server.

opHA Set Up

Here you can find how to perform the basis to start running opHA.

opHA Discovering a new Peer

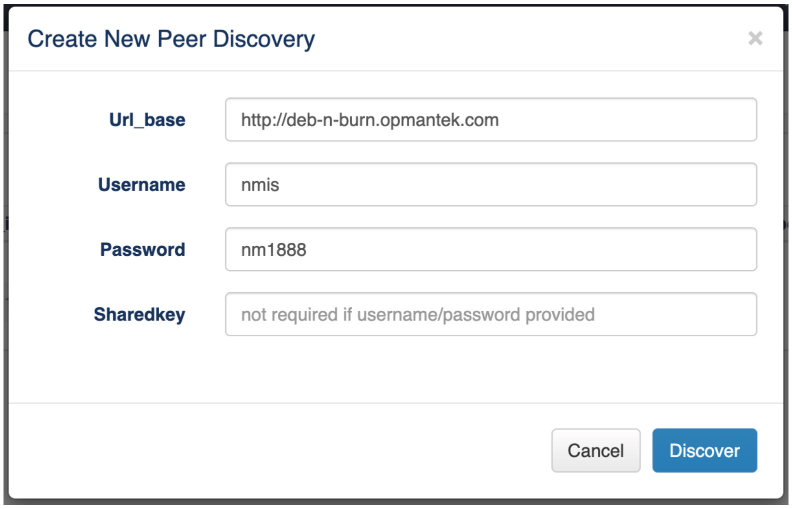
We can add pollers using the **Peers** screen, in **Discover Poller** button:



☐	cluster_id	Server Name	Status	Role	Selftest status	Api Version	Priority	Enabled
☐	0d28dcf0-8fe2-49d9-a26f-6ccf3f2875c0	poller-nine	save	Poller	Success	1		☑
☐	a515c63a-0d11-4bcb-a402-39a4600aebb9	fulla	save	Poller	Success	1		☑

Showing 1 to 2 of 2 entries

We need to introduce the follow information for the Discovery:


Create New Peer Discovery

Url_base	http://deb-n-burn.opmantek.com
Username	nmis
Password	nm1888
Sharedkey	not required if username/password provided

- URL of the peer
- Username and Password OR the SharedKey
    - For Shared Key this for the value of omkd_secrets set in the /usr/local/omk/conf/opCommon.json of the poller you are doing a discovery on.

Using HTTPS between primary and poller

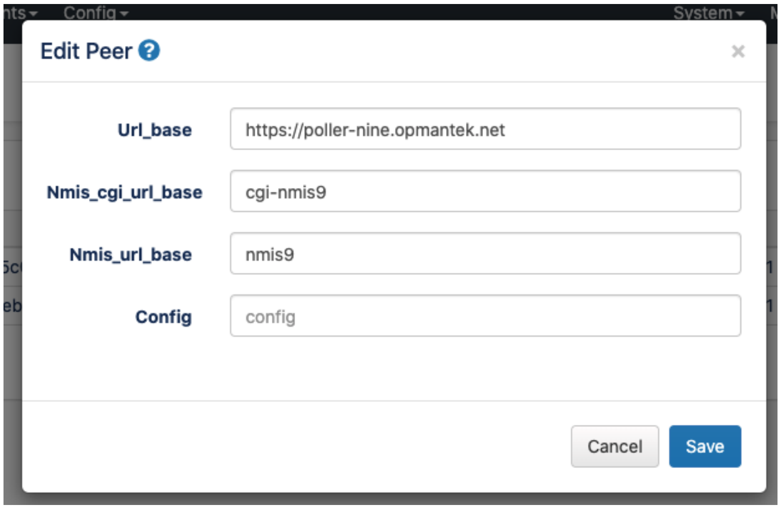
You MUST set the "**opha_url_base**" on the POLLER to the https:// url for the poller before doing discovery.

In setting opha_url_base you must also set the opha_hostname to match the fqdn.

If the opha_url_base is blank the Primary will connect to the poller but on receipt of the pollers information it will swap the https:// URL for http:// and the discovery will then fail.

opHA Edit a Peer

Once the peer was successfully discovered, we can edit the peer configuration - but it is not needed by default:



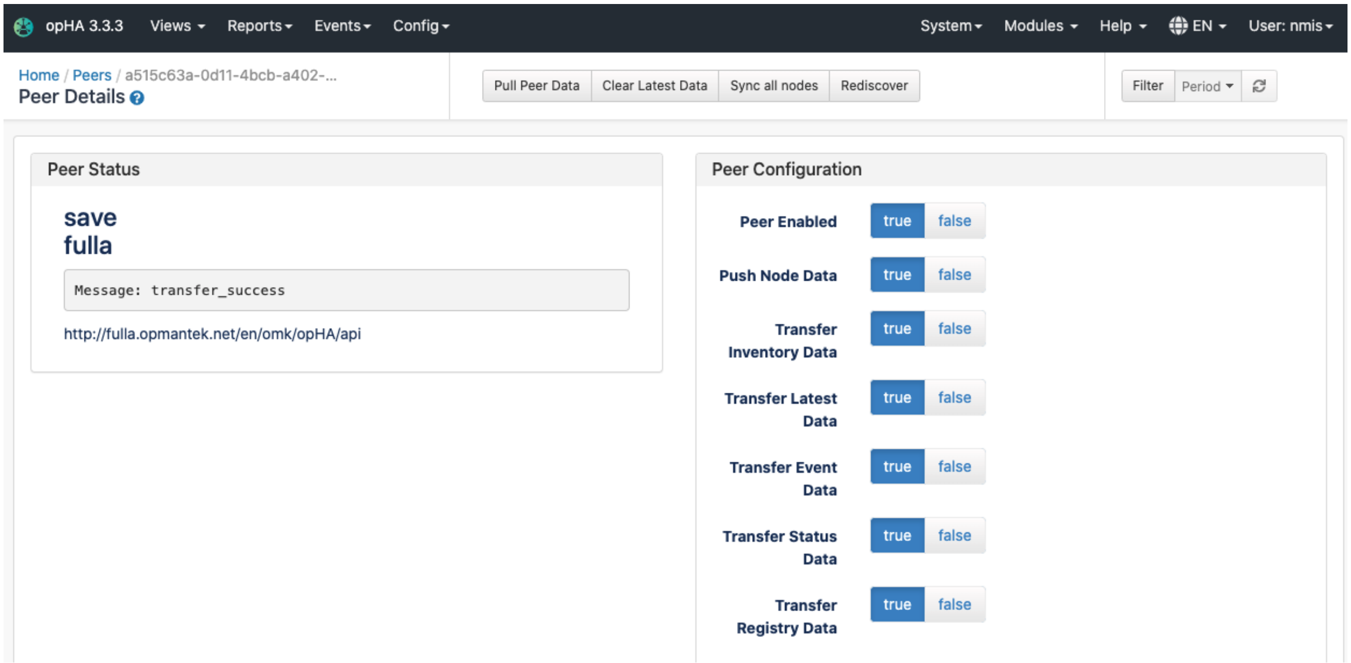
Edit Peer

Url_base	https://poller-nine.opmantek.net
Nmis_cgi_url_base	cgi-nmis9
Nmis_url_base	nmis9
Config	config

This will edit the nmis information for the poller. It will be used in NMIS to redirect a node to a poller.

opHA Data Synchronisation

Once a peer is added, we can pull the peer to synchronise all the data:



Home / Peers / a515c63a-0d11-4bcb-a402-...

Peer Details

Peer Status

save
fulla

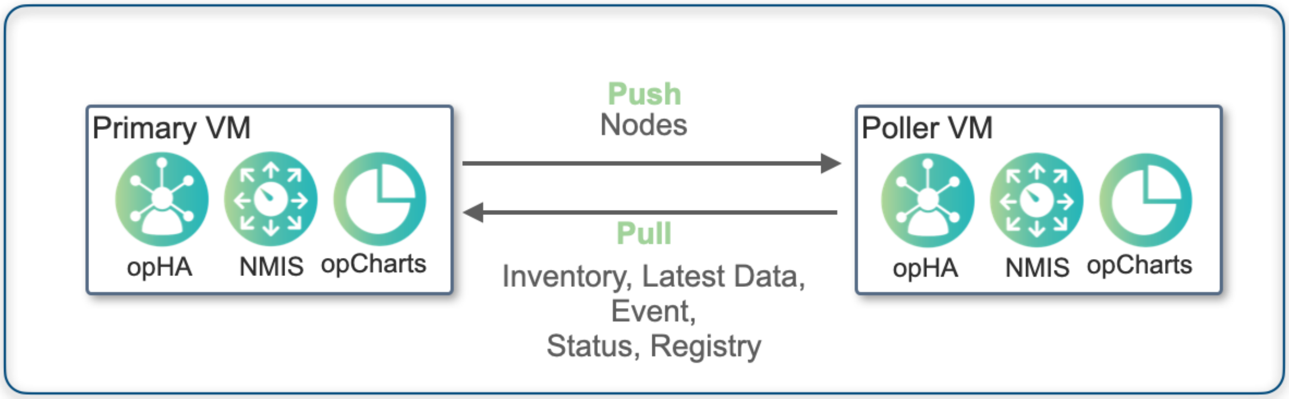
Message: transfer_success

http://fulla.opmantek.net/en/omk/opHA/api

Peer Configuration

Peer Enabled	[✓ true] false
Push Node Data	[✓ true] false
Transfer Inventory Data	[✓ true] false
Transfer Latest Data	[✓ true] false
Transfer Event Data	[✓ true] false
Transfer Status Data	[✓ true] false
Transfer Registry Data	[✓ true] false

Please note that the nodes are pushed to the pollers, but the other data is pulled:

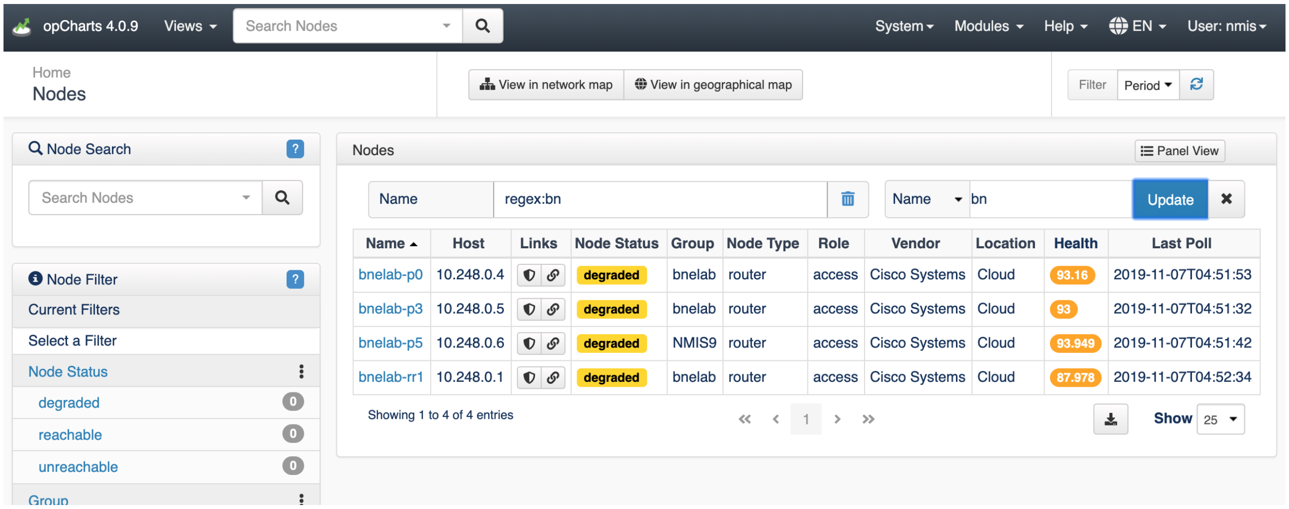


We can also use the **opHA cli tool** to synchronise the data - and use it for other actions:

```
/usr/local/omk/bin/opha-cli.pl
Usage: opha-cli.pl act=[action to take] [options...]
opha-cli.pl act=discover url_base=... username=... password=.... role=... mirror=...
opha-cli.pl act=<import_peers|export_peers|list_peers>
opha-cli.pl act=delete_peer {cluster_id=...|server_name=...}
opha-cli.pl act=pull [data_types=X...] [peers=Y] [force=t]
            pull data types except nodes
            primary <-- peers
...
```

With this tool we can automate the synchronisation process with a cron job to keep all the data up to date.

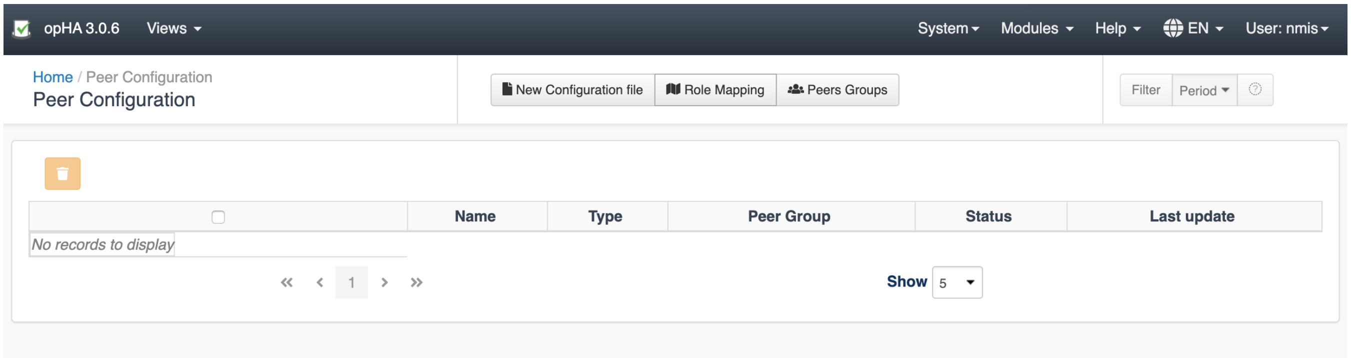
Once we have synchronised a peer we will be able to see its data from NMIS or opCharts from the **Primary**.



Name	Host	Links	Node Status	Group	Node Type	Role	Vendor	Location	Health	Last Poll
bnelab-p0	10.248.0.4		degraded	bnelab	router	access	Cisco Systems	Cloud	93.16	2019-11-07T04:51:53
bnelab-p3	10.248.0.5		degraded	bnelab	router	access	Cisco Systems	Cloud	93	2019-11-07T04:51:32
bnelab-p5	10.248.0.6		degraded	NMIS9	router	access	Cisco Systems	Cloud	93.949	2019-11-07T04:51:42
bnelab-rr1	10.248.0.1		degraded	bnelab	router	access	Cisco Systems	Cloud	87.978	2019-11-07T04:52:34

opHA Roles

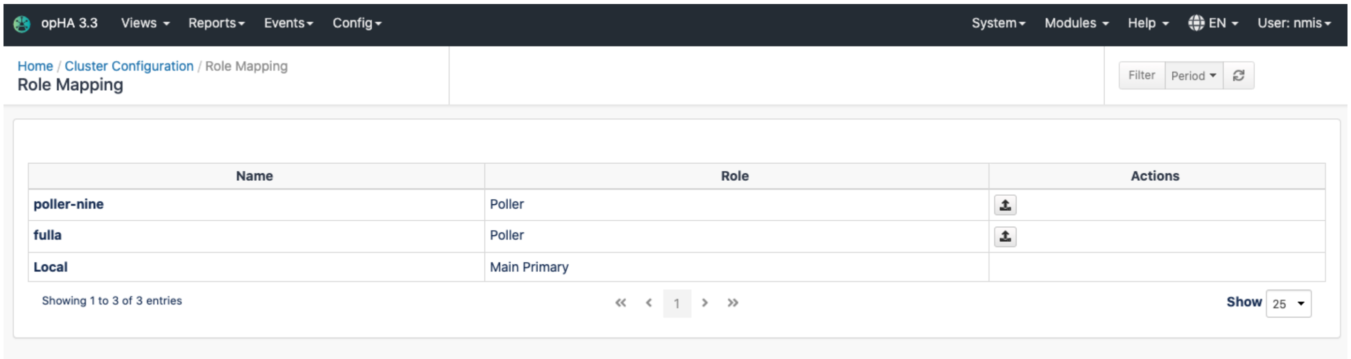
We can see the peer roles using the **configuration menu > Role Mapping**:



□	Name	Type	Peer Group	Status	Last update
No records to display					

All the roles and capabilities are documented in the following wiki page.

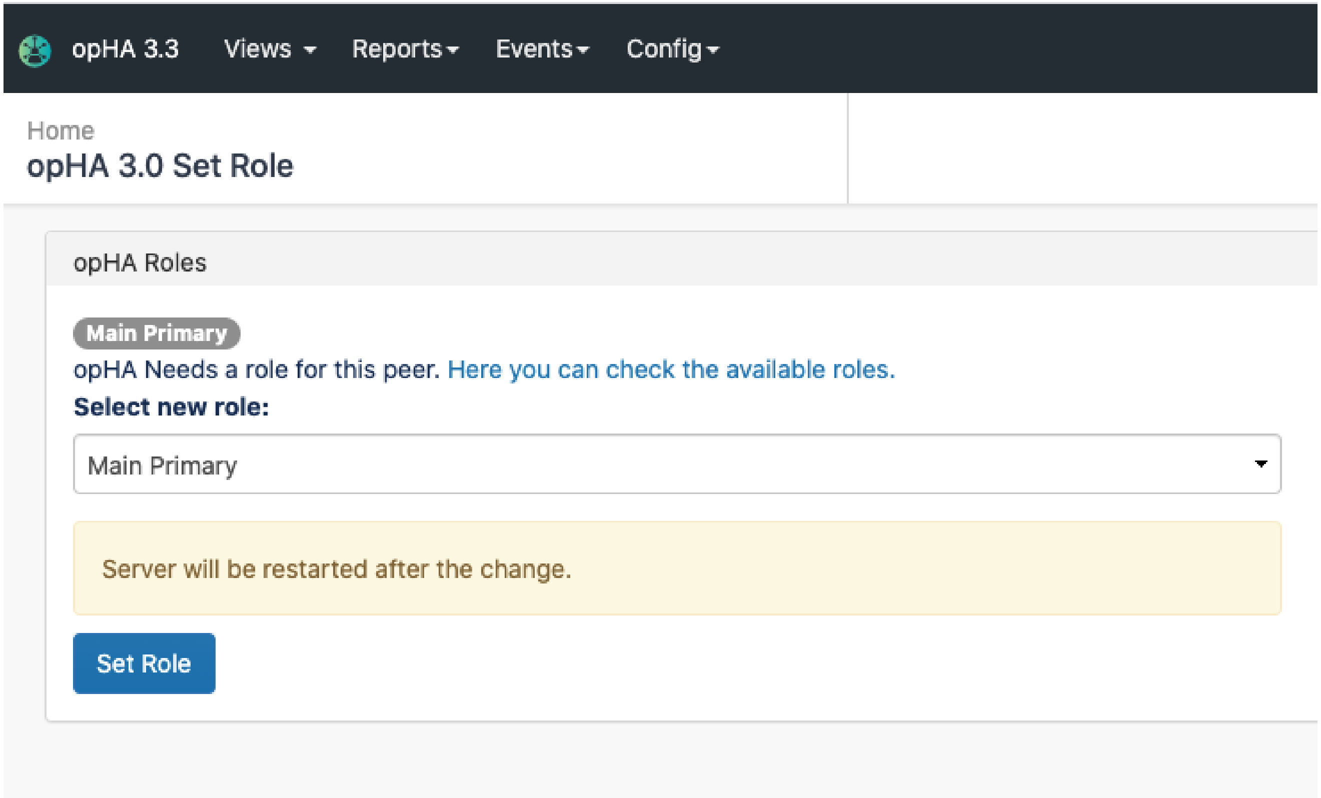
When we create a poller, we should choose which role will be a peer, a poller or a mirror. Once we discover a peer, opHA primary will send the role to the peer. From the role mapping menu, we would be able to see a peer server and the role assigned, and also click in the button to resend the role.



Name	Role	Actions
poller-nine	Poller	
fulla	Poller	
Local	Main Primary	

Change the role

To set up the local role, we can go to the menu *Views > Set Role*:



opHA 3.0 Set Role

opHA Roles

opHA Needs a role for this peer. Here you can check the available roles.

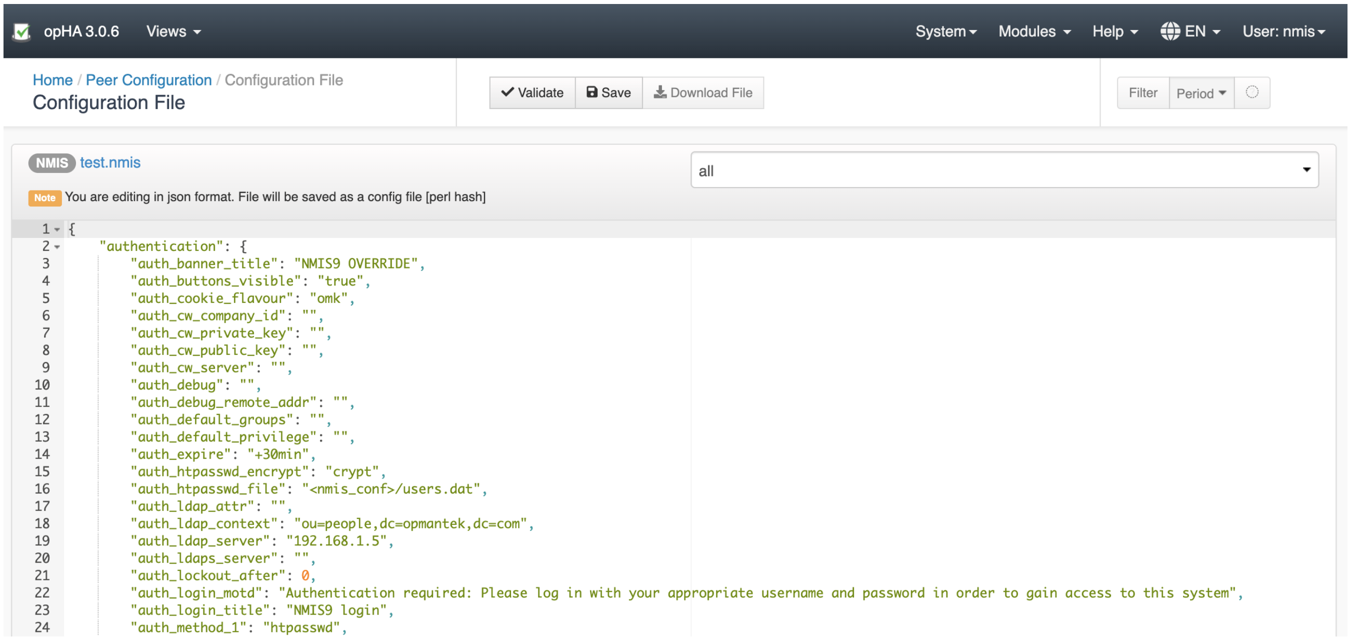
Select new role: Main Primary

Server will be restarted after the change.

Please note, the server will be restarted after the change, because all the server functionality will change.

opHA Centralised Configuration

opHA version 3.0.5 brings a new feature to modify the **NMIS** and **omk configuration** from the **Primary** server. The centralised configuration feature allows you to easily and quickly manage a large multi-server network.



Configuration File

test.nmis

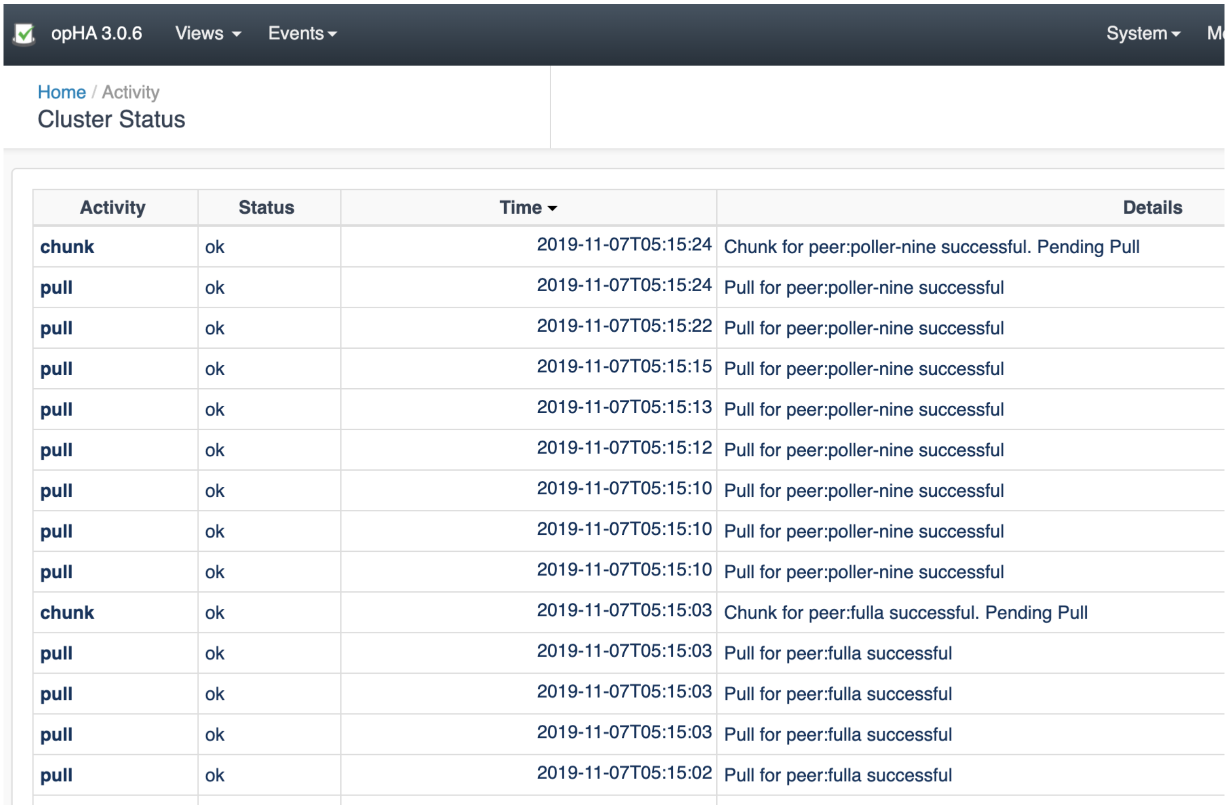
You are editing in json format. File will be saved as a config file [perl hash]

```
{
    "authentication": {
        "auth_banner_title": "NMIS9 OVERRIDE",
        "auth_buttons_visible": "true",
        "auth_cookie_flavour": "omk",
        "auth_cw_company_id": "",
        "auth_cw_private_key": "",
        "auth_cw_public_key": "",
        "auth_cw_server": "",
        "auth_debug": "",
        "auth_debug_remote_addr": "",
        "auth_default_groups": "",
        "auth_default_privilege": "",
        "auth_expire": "+30min",
        "auth_htpasswd_encrypt": "crypt",
        "auth_htpasswd_file": "<nmis_conf>/users.dat",
        "auth_ldap_attr": "",
        "auth_ldap_context": "ou=people,dc=opmantek,dc=com",
        "auth_ldap_server": "192.168.1.5",
        "auth_ldaps_server": "",
        "auth_lockout_after": 0,
        "auth_login_motd": "Authentication required: Please log in with your appropriate username and password in order to gain access to this system",
        "auth_login_title": "NMIS9 login",
        "auth_method_1": "htpasswd",
```

It is important to note that once NMIS is updated from a Primary, it cannot be edited from the poller.

Activity

We can check the opHA activity from the activity menu:



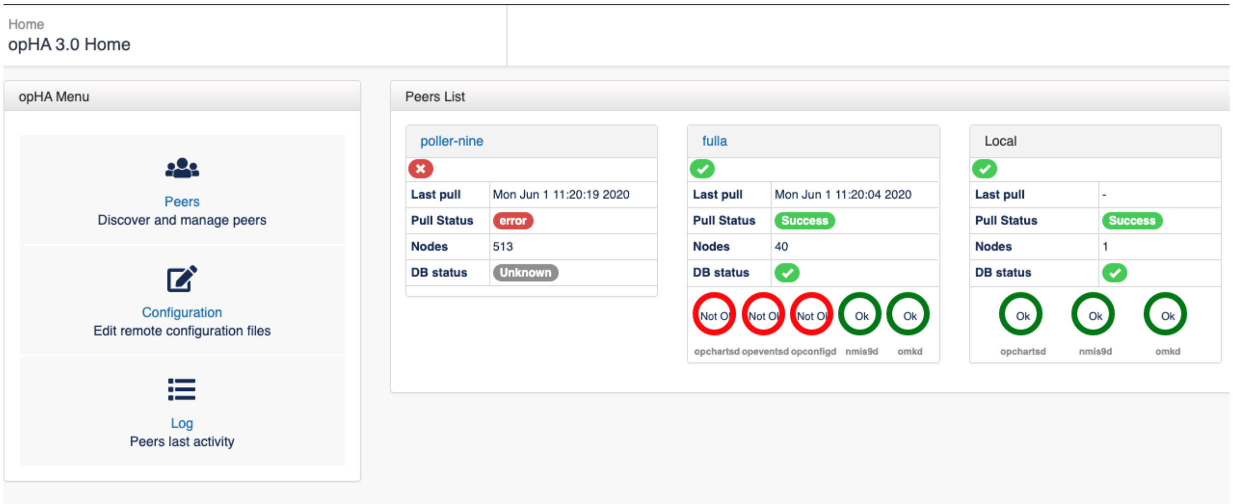
Home / Activity

Cluster Status

Activity	Status	Time	Details
chunk	ok	2019-11-07T05:15:24	Chunk for peer:poller-nine successful. Pending Pull
pull	ok	2019-11-07T05:15:24	Pull for peer:poller-nine successful
pull	ok	2019-11-07T05:15:22	Pull for peer:poller-nine successful
pull	ok	2019-11-07T05:15:15	Pull for peer:poller-nine successful
pull	ok	2019-11-07T05:15:13	Pull for peer:poller-nine successful
pull	ok	2019-11-07T05:15:12	Pull for peer:poller-nine successful
pull	ok	2019-11-07T05:15:10	Pull for peer:poller-nine successful
pull	ok	2019-11-07T05:15:10	Pull for peer:poller-nine successful
pull	ok	2019-11-07T05:15:10	Pull for peer:poller-nine successful
chunk	ok	2019-11-07T05:15:03	Chunk for peer:fulla successful. Pending Pull
pull	ok	2019-11-07T05:15:03	Pull for peer:fulla successful
pull	ok	2019-11-07T05:15:03	Pull for peer:fulla successful
pull	ok	2019-11-07T05:15:03	Pull for peer:fulla successful
pull	ok	2019-11-07T05:15:02	Pull for peer:fulla successful

Peer Status

We can check the peer status in the opHA Home page:


Home

opHA 3.0 Home

opHA Menu

Peers List

poller-nine ✗

Last pull	Mon Jun 1 11:20:19 2020
Pull Status	error
Nodes	513
DB status	Unknown

fulla ✓

Last pull	Mon Jun 1 11:20:04 2020
Pull Status	Success
Nodes	40
DB status	✓

opchartsd	opeventsd	opconfigd	nmis9d	omkd
Not Ol	Not Ol	Not Ol	Ok	Ok

Local ✓

Last pull	-
Pull Status	Success
Nodes	1
DB status	✓

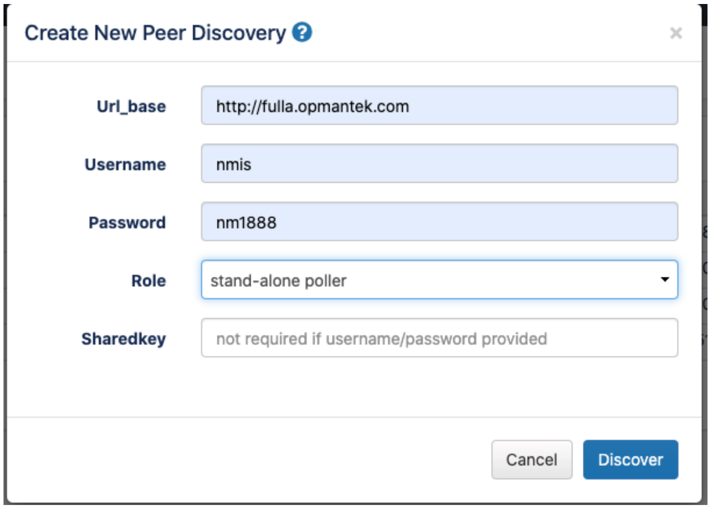
opchartsd	nmis9d	omkd
Ok	Ok	Ok

opHA will check in every pull the status of the peer using the endpoint:

```
http://host/en/omk/opHA/api/v1/selftest
```

Configuring the remote URLs

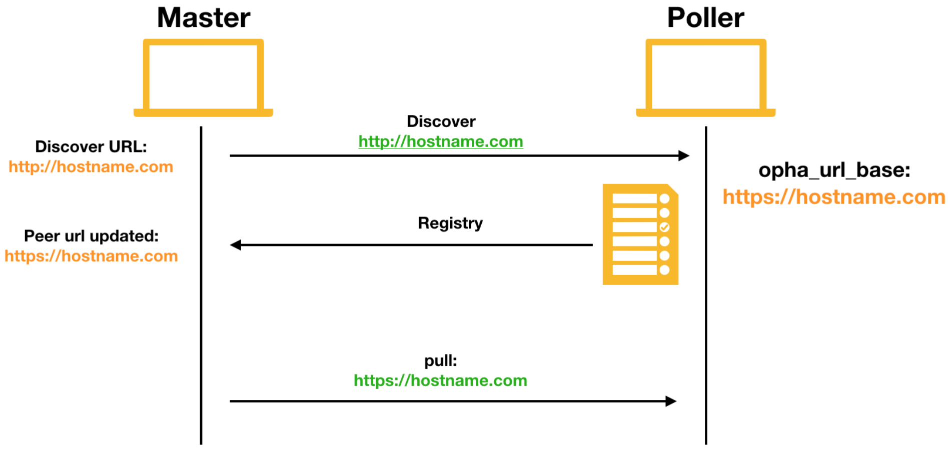
When we discover a peer, we use the URL_base setting to access to the remote server:



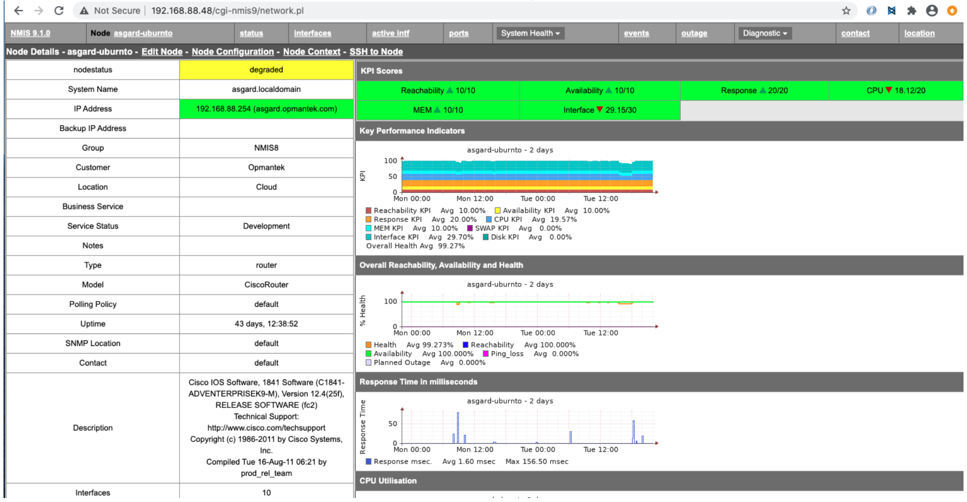
Create New Peer Discovery

Url_base	http://fulla.opmantek.com
Username	nmis
Password	nm1888
Role	stand-alone poller
Sharedkey	not required if username/password provided

These are the details that opHA is going to use to negotiate the data to be saved from the poller for the data synchronisation.



- When we set opha_url_base in the poller, during the discover, that url is going to be sent in the discovery information, that will later be used for the pull operation.
- If we don't set opha_url_base, the discovery url will be used.
- That url will be used by default for view the nodes in NMIS. This includes:
  - Click in a remote node in nmis: We will be redirected to the poller:



Not Secure | 192.168.88.48/cgi-nmis9/network.pl

Node Details - asgard-uburnto - Edit Node - Node Configuration - Node Context - SSH to Node

nodestatus	degraded
System Name	asgard.localdomain
IP Address	192.168.88.254 (asgard.opmantek.com)
Backup IP Address	
Group	NMIS8
Customer	Opmantek
Location	Cloud
Business Service	
Service Status	Development
Notes	
Type	router
Model	CiscoRouter
Polling Policy	default
Uptime	43 days, 12:38:52
SNMP Location	default
Contact	default
Description	Cisco IOS Software, 1841 Software (C1841-ADVENTERPRISEK9-M), Version 12.4(25f), RELEASE SOFTWARE (fc2) Technical Support: http://www.cisco.com/techsupport Copyright (c) 1986-2011 by Cisco Systems, Inc. Compiled Tue 16-Aug-11 06:21 by prod_rel_team
Interfaces	10

KPI Scores

Reachability ▲ 10/10	Availability ▲ 10/10	Response ▲ 20/20	CPU ▼ 18.12/20
MEM ▲ 10/10	Interface ▼ 29.15/30		

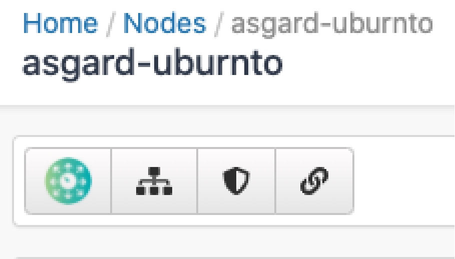
Key Performance Indicators

Overall Reachability, Availability and Health

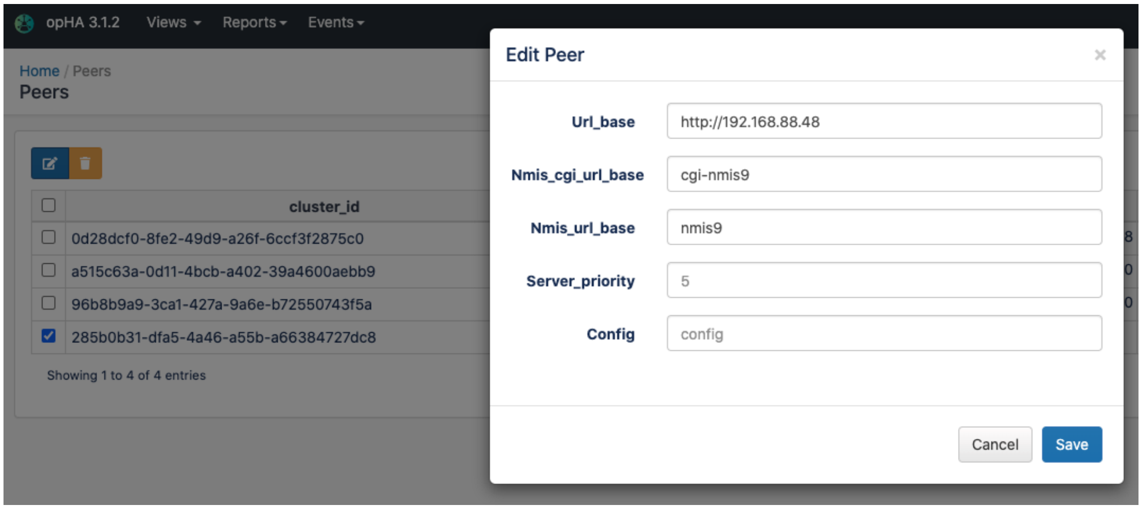
Response Time in milliseconds

CPU Utilisation

  - Click in the NMIS button in opCharts: We will be redirected to the poller - We are able to use this remote nodes NMIS button from opCharts version 4.0.7.



- The NMIS URL can be modified in opHA, when we edit a peer:



	cluster_id
□	0d28dcf0-8fe2-49d9-a26f-6ccf3f2875c0
□	a515c63a-0d11-4bcb-a402-39a4600aebb9
□	96b8b9a9-3ca1-427a-9a6e-b72550743f5a
☑	285b0b31-dfa5-4a46-a55b-a66384727dc8

Showing 1 to 4 of 4 entries

Edit Peer

Url_base	http://192.168.88.48
Nmis_cgi_url_base	cgi-nmis9
Nmis_url_base	nmis9
Server_priority	5
Config	config

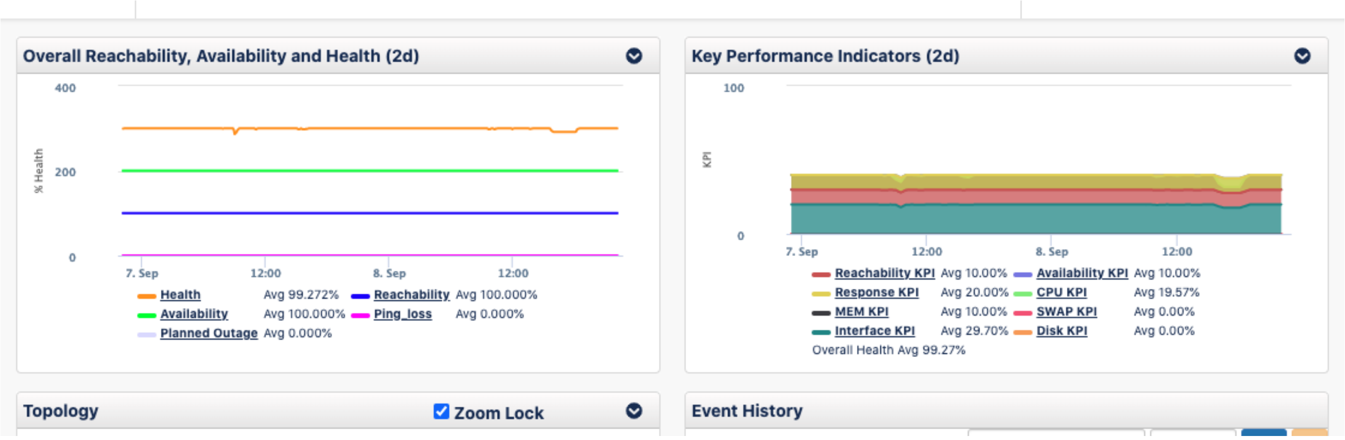
Configuring the remote URLs - opCharts

In the opHA synchronisation, the registry data for each product configured in the server will be sent to the Primary.

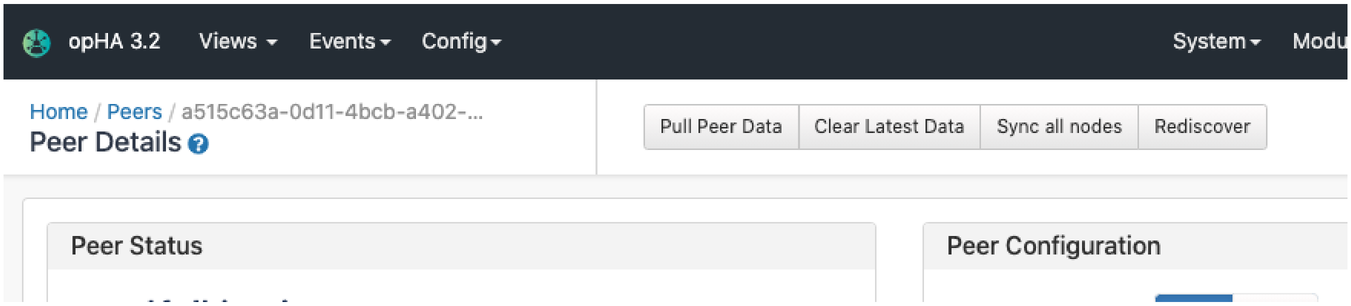
Each registry has a url property. In the opCharts case, it will be used to see the graphs from the poller.

If the registry of the poller is not being generated or the registry pull fails or is not performed, the graphs will not be loaded. So, to make sure everything works:

- Check that omkd_url_base is set in the poller.
- opcharts_url_base and opcharts_hostname can be blank, but the key needs to be defined.
- Check the registry for opCharts in
  `http://host/en/omk/opHA/api/v1/registry`
- Check that the pull is working for that server.



Peer Capabilities



In the following url, http://server/en/omk/opHA/peers/CLUSTERID you can perform several actions about the following peer capabilities:

- **Pull Peer Data**: The Primary will request all peer data enabled - except for nodes from version 3.2.1. Since the last synchronisation date. This action is performed periodically (cron job) for all peers.
- **Clear Latest Data**: Will remove the last synchronisation date, so the next pull will be complete.
- **Sync all nodes**: From 3.2.1. The Primary will send all the nodes to the peer. This means, if the peer doesn't have a node, It will be created. If the Primary does not have a node and the peer does, it will be removed from the peer. You can read more in Centralised node management page.
- **Rediscover**: From 3.2.1. The Primary will update the peer data, this is the registry url access, the user and the server name, based on the peer information:
    - **opha_api_user:** From opCommon.json config file
    - **opha_url_base:** From opCommon.json config file
    - **server_name**: From nmis config file, Config.nmis

Upgrade to version 3.2.0 and later.

Starting from version 3.2.0, we have made significant changes on our internal shared code for all our applications to work on Opmantek's latest and fastest platform, however, previously installed product are not compatible with this version.

To find out more about this upgrade please read:

- Upgrading Opmantek Applications
- Product Compatibility

What's next

- opHA 3 - Centralised configuration
- opHA 3 cli tool
- opHA 3 Redundant Node Polling and Centralised Node Management